

① Solve for y

$$\textcircled{a} \frac{3y+15}{2} = 7$$

$$\begin{array}{rcl} y & 7 \cdot 2 = 14 \\ \cdot 3 & -15 = -1 \\ +15 & \div 3 = -\frac{1}{3} \\ \div 2 & \\ = 7 & \end{array}$$

$$\textcircled{b} \begin{array}{rcl} 3x + 5y = 15 \\ -3x & -3x \end{array}$$

$$\frac{5y}{5} = \frac{15-3x}{5}$$

$$\boxed{y = 3 - \frac{3}{5}x}$$

$$\textcircled{c} y + x = 7$$

$$\boxed{y = 7 - x}$$

② Write equations for each table.

$$\textcircled{a} \begin{array}{c|c} x & y \\ \hline 0 & -9 \\ 1 & -4 \\ 2 & 1 \\ 3 & 6 \\ 4 & 11 \end{array} \begin{array}{l} \\ > +5 \\ > +5 \\ > +5 \end{array}$$

$$\boxed{y = 5x - 9}$$

$$\textcircled{b} \begin{array}{c|c} x & y \\ \hline 0 & 0.5 \\ 1 & 2 \\ 2 & 8 \\ 3 & 32 \\ 4 & 128 \end{array} \begin{array}{l} \\ > \cdot 4 \\ > \cdot 4 \\ > \cdot 4 \end{array}$$

$$\boxed{y = 0.5 \cdot 4^x}$$

$$\textcircled{c} \begin{array}{c|c} x & y \\ \hline 0 & 108 \\ 1 & 36 \\ 2 & 12 \\ 3 & 4 \\ 4 & \frac{4}{3} \end{array} \begin{array}{l} \\ > \cdot \frac{1}{3} \\ > \cdot \frac{1}{3} \\ > \cdot \frac{1}{3} \end{array}$$

$$\boxed{y = 108 \cdot \frac{1}{3}^x}$$

③ Simplify

$$\textcircled{a} 3^4 \cdot 3^2 \quad \textcircled{b} (1+0.05)^2 \cdot (1+0.05)^4$$

$$3^6$$

$$(1+0.05)^6$$

$$\textcircled{c} (xy)^3$$

$$\begin{array}{c} xy \cdot xy \cdot xy \\ \hline x^3 y^3 \end{array}$$

$$\textcircled{d} (x^2 y^3)^3$$

$$\begin{array}{c} x^2 y^3 \cdot x^2 y^3 \cdot x^2 y^3 \\ \hline x^6 y^9 \end{array}$$

## Exponential Rules

$$\textcircled{1} b^m \cdot b^n = b^{m+n}$$

example  $3^2 \cdot 3^4 = 3^{2+4} = 3^6$

$$\textcircled{2} (b^m)^n = b^{m \cdot n}$$

example  $(x^2)^3 = x^{2 \cdot 3} = x^6$

$$\textcircled{3} (ab)^n = a^n b^n$$

example  $(xy)^3 = x^3 y^3$

7.3 #1-6, 8, 10, 12

(16)

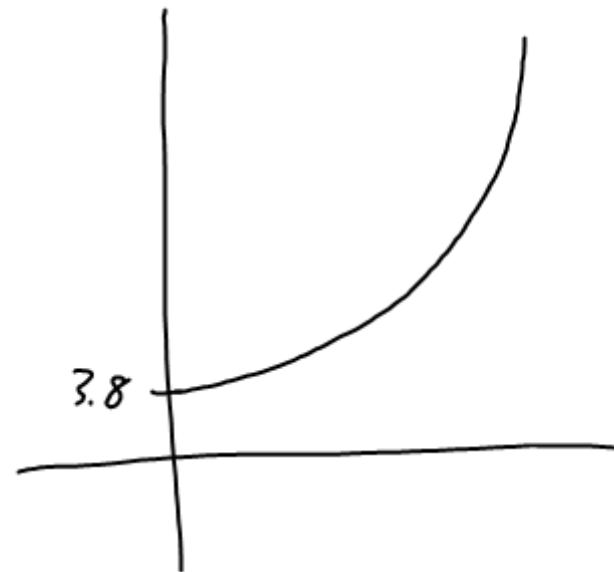
$$(2.2, 4.7) (6.8, -3.9)$$

$$\frac{-3.9 - 4.7}{6.8 - 2.2} = \frac{-8.6}{4.6} \approx -1.87 = \text{slope}$$

$$y = -1.87(x - 2.2) + 4.7$$

(14)  $P = 3.8(1 + 0.017)^t$

$1900$   $\downarrow$  pop. in 1900  
 $\downarrow$  rate of increase 1.7%  
 $\downarrow$  time in years



(b)  $t \rightarrow (0, 110)$

(d)  $1950 \rightarrow 4.13$  million

(e)  $2010 \rightarrow 4.5$  million